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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,772	08/28/2001	Kouji Inoue	SON-2193	3168
23353	7590	12/30/2003	EXAMINER	
RADER FISHMAN & GRAUER PLLC			QUARTERMAN, KEVIN J	
LION BUILDING			ART UNIT	
1233 20TH STREET N.W., SUITE 501			PAPER NUMBER	
WASHINGTON, DC 20036			2879	

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

### Application No.

09/939,772

### Applicant(s)

INOUE ET AL.

### Examiner

Kevin Quarterman

### Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 13-39, 49 and 50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 40-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0801,0902.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 13-39 and 49-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement 19 November 2003.

### ***Drawings***

2. Figures 21, 22A-C, and 23A-B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-12 and 40-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Konishi (US 6580223).

5. The applied reference has a common assignee with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

6. Regarding independent claim 1, Figure 62 of Konishi shows an electron-emitting device having a conical electron-emitting portion (16E) made of carbon (col. 11, ln. 24-26) on an electrically conductive layer (12).

7. Regarding claim 2, Figure 62 of Konishi shows an electron-emitting-portion-forming layer (80) formed between the electrically conductive layer and the electron-emitting portion.

8. Regarding claim 3, Konishi discloses the value of  $H/(S/\pi)^{1/2}$  being 3 to 7, where S is an area of bottom surface of the conical electron-emitting portion and H is a height thereof (col. 74, ln. 23-25).

9. Regarding independent claim 4, Figure 62 of Konishi shows a cold cathode field emission device comprising a cathode electrode (12) formed on a support member (11) and a conical electron-emitting portion (16E) made of carbon (col. 11, ln. 24-26) and formed on the cathode electrode.

10. Regarding claim 5, Figure 62 of Konishi shows a gate electrode (14) having an opening portion (15), and the electron-emitting portion formed on that portion of the cathode electrode positioned in the bottom of the opening portion.

11. Regarding claim 6, Figure 62 of Konishi shows an insulating layer (13) formed on the support member and the cathode electrode, a gate electrode (14) formed on the insulating layer, a second opening portion communicating with an opening portion formed in the gate electrode formed in the insulating layer, and the electron-emitting portion exposed in the bottom of the second opening portion.

12. Regarding claim 7, Figure 62 of Konishi shows an electron-emitting-forming-layer (80) formed between the cathode electrode and the electron-emitting portion.

13. Regarding claim 8, Figure 62 of Konishi shows a gate electrode (14) having an opening portion (15), the electron-emitting-portion-forming layer formed at least on the surface of that portion of the cathode electrode positioned in the bottom of the opening portion, and the electron-emitting portion formed on the electron-emitting-portion-forming layer.

14. Regarding claim 9, Figure 62 of Konishi shows an insulating layer (13) formed on the support member (11) and the cathode electrode (12), the gate electrode (14) formed on the insulating layer, a second opening portion communicating with the opening portion (15) formed in the gate electrode formed in the insulating layer, and the electron-emitting portion exposed in the bottom of the second opening portion.

15. Regarding claim 10, Figure 62 of Konishi shows the electron-emitting-portion-forming layer (80) formed of a metal thin layer.

16. Regarding claim 11, Konishi discloses the metal thin layer composed of at least one metal selected from the group consisting of nickel, molybdenum, titanium, iron,

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copper, platinum, zinc, cadmium, germanium, tin, lead, bismuth, silver, gold, indium, and thallium (col. 78, ln. 63-64).

17. Regarding claim 12, Konishi discloses the value of  $H/(S/\pi)^{1/2}$  being 3 to 7, where S is an area of bottom surface of the conical electron-emitting portion and H is a height thereof (col. 74, ln. 23-25).

18. Regarding independent claim 40, Figures 3 of Konishi shows a cold cathode field emission display comprising a plurality of pixels, each pixel being composed of a cold cathode field emission device formed on a support member (11), an anode electrode (24) and a phosphor layer (22), the anode electrode and the phosphor layer formed on a substrate (21) opposed to the cold cathode field emission device, the cold cathode field emission device comprising a cathode electrode (12) formed on a support member (11) and a conical electron-emitting portion (16E) made of carbon (col. 11, ln. 24-26) and formed on the cathode electrode.

19. Regarding claim 41, Figure 62 of Konishi shows a gate electrode (14) having an opening portion (15), and the electron-emitting portion formed on that portion of the cathode electrode positioned in the bottom of the opening portion.

20. Regarding claim 42, Figure 62 of Konishi shows an insulating layer (13) formed on the support member and the cathode electrode, a gate electrode (14) formed on the insulating layer, a second opening portion communicating with an opening portion formed in the gate electrode formed in the insulating layer, and the electron-emitting portion exposed in the bottom of the second opening portion.

21. Regarding claim 43, Figure 62 of Konishi shows an electron-emitting-forming-layer (80) formed between the cathode electrode and the electron-emitting portion.

22. Regarding claim 44, Figure 62 of Konishi shows a gate electrode (14) having an opening portion (15), the electron-emitting-portion-forming layer formed at least on the surface of that portion of the cathode electrode positioned in the bottom of the opening portion, and the electron-emitting portion formed on the electron-emitting-portion-forming layer.

23. Regarding claim 45, Figure 62 of Konishi shows an insulating layer (13) formed on the support member (11) and the cathode electrode (12), the gate electrode (14) formed on the insulating layer, a second opening portion communicating with the opening portion (15) formed in the gate electrode formed in the insulating layer, and the electron-emitting portion exposed in the bottom of the second opening portion.

24. Regarding claim 46, Figure 62 of Konishi shows the electron-emitting-portion-forming layer (80) formed of a metal thin layer.

25. Regarding claim 47, Konishi discloses the metal thin layer composed of at least one metal selected from the group consisting of nickel, molybdenum, titanium, iron, copper, platinum, zinc, cadmium, germanium, tin, lead, bismuth, silver, gold, indium, and thallium (col. 78, ln. 63-64).

26. Regarding claim 48, Konishi discloses the value of  $H/(S/\pi)^{1/2}$  being 3 to 7, where S is an area of bottom surface of the conical electron-emitting portion and H is a height thereof (col. 74, ln. 23-25).

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**Conclusion**

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Liu (US 5820433) discloses methods for manufacturing flat cold cathode arrays. Jones (US 5828288) discloses a pedestal edge emitter. Jones (US 5886460) discloses a field emitter device. Kubota (US 6465941) discloses a cold cathode field emission device.

**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (703) 308-6546. The examiner can normally be reached on M-F (8-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

*Joseph Williams*  
*Joseph Williams*

Kevin Quarterman  
Examiner  
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Nimesh Patel  
Supervisory Patent Examiner  
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kq *KA*  
December 8, 2003